

she got to be half as tall as I am, and then, sad to relate, with advancing age her temper did not improve; I am afraid if I spoke the truth I should have to describe it as savage. She became a perfect terror to many people, and she even attacked me once or twice. She was playful to the last when I had her alone, and often resumed many of her old quaint caressing ways that were indescribably fascinating from their childlikeness. But the funny thing was, that if the Bishop was near she would immediately turn upon me and scratch and bite me, and he had only to go out of sight for her good temper to return. At last, however, I felt she was becoming a nuisance to other people, by her habit of grabbing at everybody that passed, and her savage gesticulations; so, seeing also how she longed to exercise those active wiry little limbs of hers—inventing all sorts of ludicrous games and gymnastics—I made up my mind to let her loose. There is a charming little island not far from the shore, which we thought would be just the place Judy would revel in. Mr. — and Miss —, and a number of our little boys, escorted her there. She came down to the shore to watch them off, and gave one cry of dismay at being deserted; but we hope that the sweets of liberty have more than consoled her for the loss of society. I missed the creature dreadfully at first. She was a constant amusement and interest with her quaint ways, and even her naughty tempers were ludicrous. Really if Mr. Buckland had been alive I think I should have sent her to him. I think he would have appreciated her intelligence and love of a romp, and she would never have been savage with him. She never once attempted to bite our Bishop; she always preferred him to any one else, and was always affectionate with him. I want very much to know whether other people have noticed that these baboons really laugh; I have heard somewhere, I am sure, that the power of laughter is the distinction between man and animals. But Judy certainly used to laugh—not at a joke I confess; and nothing made her so savage as being laughed at. But when she romped with me she used to open her mouth and show all her white teeth, and regularly laugh like a child, especially when she was tickled. I shouldn't have parted with her if I had been living alone, but living with others, as one does here, it did not seem fair to keep a creature that really did frighten some of the household."

#### "Tanganyika Shells"

UNDER the above heading a paragraph appeared in NATURE, vol. xxv. p. 101, in which Mr. C. A. White, of Washington, states that certain species described by me in the *Proceedings of the Zoological Society*, 1881, pp. 558-560, from the great African Lake Tanganyika, "are without doubt, generically identical with the *Pyrgulifera humerosa* of Meek," a fossil form from the Bear River Tertiary of North America. Mr. W. H. Dall, of the Smithsonian Institution, had previously, in a letter to me, dated October 24, expressed a similar opinion. I have been unable to procure for examination and comparison a specimen of the North American shell, and am consequently compelled to arrive at a conclusion from a study of Mr. Meek's figure and description in the report upon the "United States Geological Exploration of the Fortieth Parallel," vol. iv., pp. 176-178, woodcut 6, and plate 17, figs. 19-19a. As a result I find it decidedly inadvisable at present to locate the two forms in question in the same genus. I admit that in regard to general outline and character of "sculpture" there is no distinction of any importance. However, when the aperture (which in univalve shells most frequently exhibits the main generic characters) is closely scrutinised, features present themselves which incline me, until actual comparison is possible, to hold these two types generically distinct. The outer lip of *Pyrgulifera* is said to be "subsinoous at the termination of the shoulder of the body volution above," and the basal margin of the aperture is described as "faintly sinuous." On the contrary, in *Paramelania* no trace of the latter character is present, and the upper extremity of the labrum where it joins the volution, instead of being "subsinoous," is actually prominent. But another equally important distinction is the prolongation of the body-whorl below the aperture, together forming a more or less basal effusion. Independent of these actual differences, we must take into consideration certain probabilities and improbabilities. In the first place the difference in geographical position militates to some extent against the identity of these two forms. Then the vast lapse of ages surely must have evolved some differences in the animals as indicated by the dissimilar apertures, and again the operculum of *Paramelania* is very peculiar, and who shall say that this appendage was

of a like nature in the Bear River shell. In conclusion, I should observe that the African form was considered of sub-generic rank by me, and not as a distinct genus, as stated by Mr. White.

EDGAR A. SMITH

#### The Growth of Trees

JUST fifty years ago I was at school in Salisbury. I have only visited it once since until last week, when I had the unique pleasure of rambling over the old but familiar haunts, of course including Old Sarum. On mounting the outer ring of the well-known mound from the Stratford side, a beech tree in the bottom of the ditch reminded me that it was just there our usher carved with his knife on such a tree "Tempus Fugit." On going down to look for the motto, I only found unreadable abrasions on the bark, but on the north side of the same tree "1817" was distinctly engraved. On examining a tree near, I found on the bark "Carpe Diem, 1831." This recalled to my memory the fact that our usher's "Tempus Fugit" was suggested by some such motto carved by the usher of another school. Is it worth recording that this carving on the bark of a beech tree is quite legible after an interval of fifty years, while the date "1817" on another is also, probably genuine? If so, perhaps it is worth noticing that both legible carvings are on a north aspect not reached by the sun, while the lost motto "Tempus Fugit" would be exposed to the sun with an easterly aspect.

Barnstable, January 2

W. SYMONS

INDIAN FOSSILS.—Mr. Richard Lydekker, of the Geological Survey of India, asks if any of our readers can give him information as to the whereabouts in England of collections of fossil bones from the Siwaliks of India. He is aware (beside the British Museum collection) of collections at Ludlow, Cambridge, and Edinburgh, but he believes there are others in the country. A large collection was sent home some years ago by a Major Hay, the destination of which is unknown to him. Mr. Lydekker is now engaged in working at Siwalik fossils, and as he intends spending some months in England next summer, he wishes to look up all the collections then.

#### OUR ASTRONOMICAL COLUMN

COMET 1881 *b*.—Notwithstanding some statements to the contrary, the orbit of this comet when the later observations are brought to bear upon it, is sensibly different from a parabola, and from two independent investigations, the first by MM. Dunér and Engström, the second by M. Bossert (from eight normal places, based upon 423 observations), the period results about 2955 years. An observation at Marseilles on October 24 gave at 9h. 39m. 4s. mean time, R.A. 18h. 44m. 58.12s., N.P.D. 20° 24' 23".2, corrected for parallax.

The following positions are given by Dr. Dunér:—

At 12h. Berlin M.T.				Distance from Earth.	
R.A.				Decl. N.	
h. m. s.					
January 10	...	22 58 11	...	57° 28' 3"	3' 118
12	...	23 3 4	...	57 15' 5"	
14	...	— 7 53	...	57 3' 3"	3' 195
16	...	— 12 39	...	56 51' 5"	
18	...	— 17 22	...	56 40' 3"	3' 274
20	...	— 22 1	...	56 29' 5"	
22	...	23 26 38	...	56 19' 2"	3' 354

The student of this branch of astronomy will be aware that comets have been followed to greater distances; the extraordinary comet of 1729, which never approached the earth, indeed could not approach her, within three times the earth's mean distance from the sun, and yet was visible with small telescopes, still affords a unique case, it must have been a body of an altogether exceptional character.

THE MINOR PLANETS IN 1882.—The supplement to the *Berliner Astronomisches Jahrbuch* for 1883, containing ephemerides of the small planets for 1882 has been circulated in advance of the publication of the volume as usual for some years past. Of the two hundred and twenty members of the group detected up to the present time, we find approximate places for every twentieth day of 217, and accurate opposition ephemerides of 41. The approximate ephemerides include No. 220. Three only of the planets approach the earth at opposition, within the earth's mean distance from the sun, viz. No. 12, *Victoria*, in

August, distance 0.891; No. 80, *Sappho*, in September, distance 0.847; and No. 27, *Euterpe*, in December, distance 0.980. No. 157, *Dejanira*, comes into opposition and aphelion about the same time, and the magnitude descends to 15.7. The last of the minors discovered is in opposition in December, mag. 14.6, but No. 216, also a recent discovery, is as bright as 8.4 at opposition on October 7. There is perhaps not much hope of recovering *Medusa* (which from the best orbit obtainable from the short course of observation in 1879 would appear to have the least mean distance amongst the small planets) in the present year, the magnitude being only 13.5, and the computed places necessarily liable to considerable error. Nos. 205, 207, 208, 210, 212, 216, 218, 219, and 220 are still without names.

MR. W. R. BIRT.—Mr. Birt, so well known in connection with lunar work, died at Leytonstone on December 14 in his seventy-eighth year. He had occupied himself some fifty years since with the variable stars, and announced in 1831 the variability of  $\alpha$  Cassiopeiæ, a difficult case, for the fluctuation in its light would appear not to exceed a half-magnitude, and indeed has been doubted by no less an authority than Prof. Julius Schmidt. Sir John Herschel, however, supported Mr. Birt's conclusion, and we were once shown by the late Prof. Heis a series of curves exhibiting the results of several years' observations, which indicated sensible though very irregular variability. Much of Mr. Birt's lunar work was undertaken under the auspices of a Committee of the British Association, and his maps of various parts of the moon's surface, extending to great detail, are well known.

M. ALFRED GAUTIER.—In the death of M. Alfred Gautier, at Geneva, on November 30, at the age of eighty-eight years, as already announced, the Royal Astronomical Society have lost the oldest Associate upon their list; he died in full possession of his faculties after a very short illness. M. Gautier was elected into the above Society in January, 1822, or two years after its formation. M. Plantamour of Geneva now heads the list of Associates.

#### THE SMOKE ABATEMENT EXHIBITION

THIS Exhibition originated, as explained in the introduction to the Catalogue, in the action of the Committee of the National Health Society, with whom the Kyrle Society afterwards joined in appointing a Joint Committee to consider how action could be taken which should tend to the abatement of the smoke produced in the metropolis. In the words of this introduction, "The first proceeding of the Committee was to communicate with colliery owners and manufacturers of heating apparatus as to the means available for the reduction of smoke, and next with the metropolitan parochial authorities and public bodies, directing their attention to the serious and increasing evil, and asking their co-operation in abating it." Public meetings were held at the Mansion House and other places in different parts of London; and the public interest in the subject appearing to be sufficient to justify such an experiment, the Committee determined to hold an exhibition of appliances for the reduction of smoke both in manufacturing and domestic fires.

The idea entertained by the promoters of the Exhibition has been that, in order to effect a reduction in the quantity of smoke poured out of chimneys of different kinds in large towns, it was first necessary to convince people that appliances exist which will tend to this result, and it was therefore determined to invite an exhibition of smokeless fuels, and apparatus for burning them, as well as of appliances for lessening the amount of smoke given off by bituminous coal. The call has been very readily responded to, and the catalogue shows a list of over 230 exhibitors.

Tests are being made by experts of the performances of the different apparatus, which, in the case of the domestic grates, &c., are carried out in specially constructed rooms; the fumes passing up the chimneys being carefully examined to determine the quantities of carbon (other than carbonic acid) and other unconsumed matter passing away from the fire; the consumption of fuel and

the temperatures maintained being also carefully noted. A jury has been appointed to award prizes, medals, &c. to those appliances which they consider best adapted to fulfil the purposes in view.

The Exhibition is naturally divided into two great divisions: appliances for trade purposes, and those for domestic purposes. In the first division the economic use of gas instead of solid fuel is illustrated in a small kiln for burning pottery and glass, and its use, instead of steam, is shown in several different kinds of gas-engines. The means of producing steam, however, occupies the principal place in this division. Several mechanical stokers and other appliances for firing boilers, so as to produce no visible smoke, are shown, and those which are at work demonstrate that—at least after steam has once been got up—it is easy to raise any quantity of steam without the production of smoke at the top of the chimney. Moreover, as these appliances are stated, on apparently good authority, to effect an economy in the expense of raising steam, it is to be hoped that their adoption is rapidly becoming general.

It is with the second division, however, that most individuals are more particularly interested, and it is from fires of this kind that the bulk of the smoke is produced, at all events in the west end of London.

Domestic fires, again, may be divided into two classes, those for cooking and those for warming rooms. It is with the latter that we propose to deal in this article. And first we will consider what it is that we want in our living rooms. We are strongly of the same opinion as Sir F. Bramwell, that we must have an "open, pokeable, companionable fire."

We believe that the value of an open fire for warming living rooms cannot be too strongly insisted on; Dr. C. W. Siemens has lately pointed out why a room in which the air is comparatively cool, and the walls, furniture, &c., are warmed by rays from the fire, as is the case when an open fire is used, is so much more pleasant and healthy than one in which the air is warmed by contact with hot surfaces of the stove or heating apparatus, and the walls, furniture, &c., are at a lower temperature, and we believe it is to the use of open fireplaces that the general freshness of complexion of the inhabitants of these islands, and the absence of the use of spectacles among the young, are in a very large measure to be attributed.

One disadvantage in open fires, which has been much dwelt upon—the waste of fuel—is we believe considerably exaggerated. Doubtless a small proportion of the coal used in an open fire-place would be sufficient to maintain the temperature of a room if a close stove were used. But is the rest so entirely wasted as some would have us believe? The greater part of the heat, as they say, "goes up the chimney." Is it therefore wasted? We think not. It performs work in ventilating the room, and it is at least doubtful whether in an ordinary dwelling room the same quantity of vitiated air could be removed (and therefore the same quantity of fresh air be introduced) as cheaply and conveniently by any other means; at all events, the so-called "waste heat" could not be made use of to any large extent as radiant heat, and open grates are shown in the exhibition in which a part is utilised in warming air for admission to the room, or heating water-pipes, &c.

The problem of how to have an open fire without smoke, or with considerably less smoke than we have at present, is one towards the solution of which we hope this exhibition will give valuable assistance. Fires are shown in which gas, coke, these two together, anthracite, or Welsh coal, and bituminous coal, respectively are the fuel. Several different kinds, both of gas stoves and open gas fires are shown. There seems to be no novelty in any of them, and we believe that they are generally so well known as to need no description here; they have the merit of being extremely handy and cleanly; they are not